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ADDITIONAL NOTICES.

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1. Note on the frequent Omission of Readings of the Barometer and Thermometer in Sextant Observations for the Determination of Latitude and Longitude. By Edwin Dunkin, Esq.

(Extracted from the 'Monthly Notices of the Royal Astronomical Society,' vol. xxiv. p. 121.)

In offering the following remarks on a subject which has lately given me much trouble, I think it may be useful to call the attention of those members of the Society who are interested in astro-geographical investigations to a most important fact. It appears that, in the determination of latitudes and longitudes by the sextant, while the greatest care has generally been taken by travellers in the astronomical part of the observations of meridian altitudes, local time, or lunar distances, leaving really nothing more to be desired in that direction;—corresponding observations of the variations in the condition of the atmosphere are frequently omitted, notwithstanding that they are such important elements in the deduction of the proper correction for refraction. This omission is to be regretted, even when the traveller keeps a meteorological journal, as the observations in this instance are generally confined to a few readings daily, which differ considerably, especially the temperature, from what would be recorded about the time of the sextant observation.

These few considerations have occurred to me during the discussion of Capt. J. H. Speke's astronomical observations, the reduction of which was performed under my superintendence. So far as Capt. Speke's observations are concerned, I have nothing but the most unqualified commendation, and I have felt personally indebted to him for the general accuracy and order, as exhibited in the whole of his astronomical records from Zanzibar to Gondokoro. The object of these remarks is, therefore, not to complain of, nor even to criticise, what is already performed, but simply to offer a suggestion which might be available for the future.

As a result of the absence of corresponding meteorological observations, I have been informed that it has frequently been the practice in the reduction of lunar distances, &c., to extract the correction for refraction from a table, constructed with a barometer reading of 30 inches and a thermometer reading of 50°, without any regard to the condition of the atmospheric pressure, or of the temperature of the air at the time of observation. For nautical purposes, this rough method may in general be sufficiently accurate; but when the observing station is elevated several thousand feet above the level of the sea, and when the resulting longitude is intended to fix permanently the geographical position of the place, the effect of the decreased atmospheric pressure becomes of the highest importance, and ought on no account to be neglected.

To exhibit the effect of this omission, I have given as examples, though by no means extreme cases, two different results for longitude with the lunar distances corrected and uncorrected for the variations in the readings of the barometer and thermometer. In the reduction of Capt. Speke's astronomical observations, I was obliged to assume these readings, in consequence of no

recorded barometric readings having been placed in my hands; but fortunately, scarcely any ill effect arose from this circumstance, as I found subsequently from an examination of some observations of the temperature of the boiling point of water made during the route, that my assumed readings differed very little from the truth.

From the mean of a series of sextant observations made at Kazé by Capt. Speke, in 1861, February 28, at 20h. 25m. 34s. local time, it was found that the angular distance at that time between the Sun and Moon, when cleared from refraction and parallax, was 123° 10′ 28″ corrected, and 123° 11′ 4″ uncorrected. These values give for longitude:—

Again, in 1862, December 12, at Faloro, at 20h. 37m. 27s. local time, the angular distance between the Sun and Moon was found to be 103° 39′ 1″ corrected, and 103° 39′ 25″ uncorrected; the resulting values for longitude being:—

I think these differences are sufficiently important to attract the attention of those who may in future be called upon to make or reduce similar astronomical observations for geographical purposes. They also justify me in laying the subject before the Society. I would, therefore, most strongly recommend that future travellers should be specially instructed to record, not only the readings of the chronometer and sextant, but also the readings of the barometer and thermometer at least once during each series of observations. If they will faithfully do this, they will greatly relieve the mind of the computer, and also (which is of more consequence) increase the value of their observations two-fold.

2. Gold Fields in Queensland. Extract from a Despatch from Sir George Bowen to the Duke of Newcastle.

Communicated by the COLONIAL OFFICE.

"Two Gold Fields have been recently 'proclaimed' in this colony. One of them is about 20 miles inland from the town of Gladstone; and the other is on the Peak Downs, about 250 miles north-west of Rockhampton. A large number of persons have already congregated at these two localities, and a considerable quantity of gold has been procured. The discovery of a new Gold Field in Australia no longer causes the general excitement of ten years ago. Gold has also been recently discovered near Dalgai on the Darling Downs, and at some other places. A rich copper-mine is being worked by a Company close to the Gold Field on the Peak Downs. It was from the first foretold that the increase of our population would be sure to lead to the development of our mineral resources."